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(56) **References Cited**

U.S. PATENT DOCUMENTS					
3,472,230	A *	10/1969	Fogarty .....	A61B 17/221	606/127
3,952,747	A *	4/1976	Kimmell, Jr. ....	A61F 2/01	128/899
4,425,908	A *	1/1984	Simon .....	A61F 2/01	128/899
4,619,246	A *	10/1986	Molgaard-Nielsen ....	A61F 2/01	128/899

(Continued)

FOREIGN PATENT DOCUMENTS

DE	33 26 648 A1	2/1985
EP	1 681 073 B1	8/2007

## OTHER PUBLICATIONS

Hoperoft et al. What is the Young's Modulus of Silicon? Journal of Microelectric Systems, col. 19, No. 2, 2010.\*

(Continued)

Primary Examiner — Bhisma Mehta  
Assistant Examiner — Matthew A Engel  
(74) Attorney, Agent, or Firm — Brinks Gilson & Lione

(57) **ABSTRACT**

A hemodialysis catheter with a plurality of umbrella-like wire members covered with a film which works as a thrombus blocker and can easily and effectively remove the thrombus is disclosed. The hemodialysis catheter has a proximal lumen, the arterial lumen, and a distal lumen, the venous lumen. An elongate member is longitudinally put in either the proximal lumen or the distal lumen, or two elongate members in both lumens. A plurality of umbrella-like wire members are connected to the end of the elongate

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